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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/525,767

02/28/2005

Franz-Josef Dietzen

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EXAMINER

ZEMEL, IRINA SOPHIA

ART UNIT

PAPER NUMBER

1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/525,767	Applicant(s) DIETZEN ET AL.	
	Examiner Irina S. Zemel	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8-25-05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-6, 9-17 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patents 4,990,542 and 5,317,033 (of record) both to Monani, et al., (hereinafter "Motani '542" and Motani "'033") in combination with either US Patent 4,818,451 to Arai et al., (hereinafter "Arai"), or US Patent 4,912,140 to Tusim, (hereinafter "Tusim"), and further in combination with EP 0915127 to BASf or WO 98/ 51735 to BASf both of record, (hereinafter "BASF EP" and "BASF WO").

As discussed in the previous office actions, both Motani references disclose foams obtained by a method that includes addition of a blowing agent to a thermoplastic polymer melt, and cooling and extrusion, through a die, of the polymer melt comprising blowing agent. See all illustrative examples in both references. The disclosed blowing agent can be any known hydrocarbon, halohydrocarbon, etc. as per disclosure of Motani '542, column 5, lines 36-45 or Motani '033, column 7, lines 57-68. Both references further expressly teach addition of water in combination with water absorbing agent into the composition in the amount corresponding to the claimed amounts. See Motani '033, column

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4, lines 45-47, or Motani '542, column 7, lines 26-40. Water can be used alone, but preferably in combination with and alcohol as per disclosure of Motani '033, column 5, lines 47-55 or Motani '542, column 4, lines 13-22. The density of the foamed sheets disclosed by Motani references fully correspond to the density of the foamed beads of the instant claims

Both references further expressly disclose addition of water absorbent components that can be high molecular weight compounds (Motani '033 abstract, column 5, examples) or silica compounds (Motani '542 column 3-4, examples).

In addition, both Motani references expressly disclose incorporation of cell size controlling agents that include talc, (or phyllosilicates), that inherently perform the function of absorbers. See Motani '542, column 3, last paragraph, or Motani.

Motani do not disclose palletizing or granulating extruded polymers by cutting of the polymer melt comprising blowing agent downstream of the die at reduced pressure with foaming to give foam beads. In the essence, the difference between the process disclosed by Motani references and the claimed invention is the step of shaping the foams into different shapes, i.e., forming the foams into a sheet as disclosed in Motani or cutting into beads as claimed in the instant application.

As previously discussed, the step of underwater granulating of expandable polystyrene composition to obtain beads of desired shape is well known in the art of expanded polystyrene as evident from, for example, both BASF references. Thus, adding of step of underwater palletizing to the process

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of Motani would have been obvious for the reasons discussed above, i.e., to obtain composition in a desired shape for applications where *such shape is desired*. While, as discussed in the previous office action the BASF references exemplify granulating at pressures of 5 or 10 Bar, both of the BASF references expressly state that application of pressure in the granulating step is only desirable to avoid foaming, thus clearly suggesting not applying the elevated pressure if foaming is desirable and foamed particles are desired. See [0018] of ABSF EP and page 4 of BASF WO. In addition, foaming the beads directly at the point of exiting from extruder by releasing extrudate into lower or atmospheric pressure is well known in the art when it is desired to obtain the pre-expanded beads in one step, as evidenced from Tusim, column 2, lines 49-51 and example in column 3, lines 60-63, or Arai, column 4, lines 56-64. It is also noted that cutting the foams of Motani into beads via the steps disclosed in the secondary references would inherently result in the beads of claimed density as the foaming conditions (release to atmospheric pressure) of the compositions of Motani results in foams of such densities. Thus, change in shape of foams sheets disclosed by Motani to obtain the foamed beads for applications where such form is most desired by adding the steps as disclosed in the secondary references would have been obvious as per discussions above.

Alternatively, use of the combination of polystyrene with the claimed blowing agent containing water, alcohol and absorber in process of BASF (either WO or EP) would have been obvious in view of teachings of either one of Motani, as using such combined blowing agent mixtures results in improved heat

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insulating and flexural properties as per expressed teachings of Motani by generating foams with specific cell size distribution. Again, as discussed above, the BASF references exemplify granulating at pressures of 5 or 10 Bar, both of the BASF references expressly state that application of pressure in the granulating step is only desirable to avoid foaming, thus clearly suggesting not applying the elevated pressure if foaming is desirable and foamed particles are desired. See [0018] of BASF EP and page 4 of BASF WO. In addition, foaming the beads directly at the point of exiting from extruder by releasing extrudate into lower or atmospheric pressure is well known in the art when it is desired to obtain the pre-expanded beads in one step, as evidenced from Tusim, column 2, lines 49-51 and example in column 3, lines 60-63, or Arai, column 4, lines 56-64. Such steps would inherently result in the densities corresponding to the claimed densities. The burden is shifted to the applicants to provide factual evidence to the contrary.

Claims 7-8 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motani '033 or Motani '542 in combination with Arai or Tusim and with BASF EP or BASF WO as applied to claims 1-3 above and further in view of US Patent 4,585,825 to Wesselmann, (hereinafter "Wesselmann").

The disclosure of Motani references and the EP references are discussed above. The Montani references, while expressly discloses that the process of the invention is applicable to polystyrenes and polyolefins with polystyrenes being preferred polymers, do not expressly address the molecular weight

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distribution of the polystyrenes suitable for the invention, thus implying that any known polystyrene would have been usable in the disclosed invention. Use of bi- or multi-modal molecular weight distribution polystyrenes with broad molecular weight distribution in the inventions of Montani (as modified for underwater granulating per disclosures of other references) would have been obvious as it is notoriously known in the art that polystyrenes with bi- and/or multi-modal molecular weight distribution exhibit superior properties such as processability, heat resistance and other physical properties as compared to single peak MED polystyrenes. This position is fully supported by, for example, disclosure of Wesselmann, disclosing multi-modal polystyrenes and their superior physical characteristics. Thus, invention as claimed would have been obvious in view of the combined teachings of the cited references absent showing of unexpected results that can be clearly attributed to the claimed MWD of polymers.

Response to Arguments

Applicant's arguments filed 11-28-2007 have been fully considered but they are not persuasive. The applicants argue that The BASF and Motani references are not combinable as the Motani reference discloses product foamed during the extrusion and BASF discloses products that are not foamed during such step of extrusion. While this may be so, both references are concerned with production of foamable composition and, ultimately foams obtained from similar compositions. Thus, the references are certainly from the same field of endeavor. In addition, In rejection over Motani as the primary reference, the BASF references were only used for their teachings of shaping the

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final product by granulating the extrudate (rather than extruding in a different shape). In addition, contrary to the applicants allegation that the disclosure of BASF is limited to the elevated pressures to avoid foaming, as discussed in the previous office action, while this may be the preferred embodiment, the reference expressly state that application of pressure in the granulating step is only desirable to avoid foaming, thus clearly suggesting not applying the elevated pressure if foaming is desirable and foamed particles are desired. See [0018] of ABSF EP and page 4 of BASF WO.

In using BASF as the primary references in the alternative rejection, the teachings of Motani relied upon is the teachings that discloses that polystyrene based foams obtained by using specified combination of blowing agents and solubilizers results in improved heat resistance of the foams and other improved properties. Clearly, similar results are expected in the beads of BASF as based on the same polymer composition.

Insofar as the applicants arguments regarding the step of cutting the extrudate at reduced pressures, this arguments is already addressed above in view of suggestions in the WO references. In addition, two new references are used in the rejections to further provide evidence that such steps are well known in the art to obtain pre-foamed particles for the applications where such specific shape is the desired shape.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Irina S. Zemel/
Primary Examiner, Art Unit 1796

Irina S. Zemel
Primary Examiner
Art Unit 1796

ISZ